

Swimming in the desert? The role of environment in motion verb acquisition

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Abstract. Any event includes countless components, giving the learner many possible options in mapping verb meanings. Previous research demonstrates that children are sensitive to the distribution of motion verbs in their language, mapping ambiguous verb-event pairings to manner if their language has more manner verbs, like English, and path if their language has more path verbs, like Spanish. Previous work also demonstrates that children have some sensitivity visual components, such as an event's location, when they are learning motion verbs. Our study explores how the learner weighs components of visual scene against the distributional factors present in their language. Like previous studies, we find that English-learning children are better at encoding manner than path information. Additionally, we build on previous work on motion verb acquisition, showing that children are differentially influenced by different kinds of background environments.

Keywords. verb learning; language acquisition; motion verbs

1. Introduction. Any event includes countless components, giving the learner many possible options in mapping verb meanings. For example, a motion event displays a *manner* of movement, *how* a movement happens, like *walking* or *swimming*; and a *path* of movement, *where* a movement happens, like *exiting* or *circling*. Previous research demonstrates that children are sensitive to the distribution of motion verbs in their language, mapping ambiguous verb-event pairings to *manner* if their language has more manner verbs (e.g. English), and *path* if their language has more path verbs (e.g. Spanish) (Papafragou & Selimis 2009; Talmy 1991). Other visual components are potentially relevant to verb meaning: *walking* requires contact with the ground, *swimming* does not. *Exiting* requires a structure to be exited, *circling* does not. Previous work suggests children have some sensitivity to background when learning motion verbs (Smyder & Harrigan 2021). Our study explores how the learner weighs components of visual scene against the distributional factors present in their language.

2. Background. This work investigates the acquisition of motion verbs, which refer to motion events, and the role of the event locations in children's mapping of verb meaning. Previous theoretical and experimental work lay the groundwork for our study.

2.1. MOTION VERB TYPOLOGY. Verbs of motion fall into two basic categories: *manner* verbs (*skip*, *roll*), which describe how a movement happens; and *path* verbs (*enter*, *exit*), which describe the trajectory of the motion. Native English speakers might be more likely to encode *blicking* as the "running", the *manner* aspect of the previously described action, because the default in English is to map a motion verb to a manner. However, this intuition is not universal. Talmy (2003) describes two types of semantic framing that the world's languages exhibit: *verb-*

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framed languages and *satellite-framed* languages. *Verb-framed* languages include those that default to encoding path onto the main verb. Languages that have this frame include Romance varieties, Japanese, and Semitic. In *verb-framed* languages, other semantic properties, such as manner, are encoded on surrounding satellites such as prepositional or adverbial phrases (Cappelle 2012; Pedersen 2019; Schröder 2016). For example, French is among these languages (1).

- (1) French (Cappelle 2012:5)
 un OVNI passa à grande vitesse.
 a UFO pass-PAST at great speed
 ‘a UFO passed at great speed.’

In French, the path schema of the sentence ‘pass’ is encoded in the main verb, while the manner ‘speed’ is encoded onto a prepositional satellite (Cappelle 2012). *Satellite-framed* languages show a different pattern. In these frames, path is encoded onto non-verbal satellites in the sentence, while manner may be encoded onto the main verb. Chinese (2) and English (3) are examples of languages that have a *satellite-framed* structure, along with some Indo-European languages (Schröder 2016; Shi & Wu 2014; Slobin 2004; Talmy 2003).

- (2) Chinese (Shi & Wu 2014:1240)
 tā zǒu chū le guānhǎilóu.
 3SG walk exit PFV sea-viewing tower
 ‘He walked out of the sea-viewing tower.’

- (3) She is running out of the house.

As with any grammatical structure, whether a language is *verb-framed* or *satellite-framed* is subject to change over time as the language evolves. Chinese evolved over time from a *verb-framed* language to a *satellite-framed* language. Like English, Modern Chinese encodes path onto non-verb satellites (Hohenstein et al. 2006; Shi & Wu 2014).

Typological literature maintains the consensus that when a motion event is expressed in a language, directional features are considered the “core” lexical element (Talmy 2003; Johnson 1987). At minimum, motion events require two elements: *path*, which indicates trajectory, and *ground*, which indicates a point of orientation for the figure (Brown & Gullberg 2010; Nakazawa 2007; Talmy 1991).

- (4) His sister_[figure] entered_[path] the room_[ground].

Manner, however, is considered optional in motion events. Manner can be added as a predicative satellite (5). Alternatively, it can be expressed in the main verb, while path is maintained in a predicative satellite (6).

- (5) His sister_[figure] entered_[path] the room_[ground] hopping_[manner].

- (6) His sister_[figure] hopped_[manner] into_[path] the room_[ground].

The preferred structure of any given language is predicted by its typological categorization as a *verb-frame* or a *satellite-frame* language. Since path schema are considered the core of the sentence event, typologists observe that manner verbs show a great deal of diversity and nuance in *satellite-frame* languages (Cifuentes-Férez 2008; Slobin 2004). Manner verbs occur in one of two levels of lexical specificity: basic and non-basic. Basic verbs include those that express the most general sense of the action (e.g. *walk, run, jump*), whereas non-basic verbs are the variations of a basic verb (e.g. *dash, jog, sprint* are all second level verbs under *run*). *Verb-frame*

languages tend to have a less diverse inventory of second-level manner verbs (Slobin 2004). Cross-linguistically, path verbs show little variation in the number of unique paths expressed by the language's verbs, which may be due to the finite number of possible paths in which a figure can move. For example, Spanish and English share 13 path types, including 'away from,' 'up/onto,' and 'to/towards;' however, Spanish tends to show more lexical variation within the inventory of these types than English (Cifuentes-Férez 2008; Selimis & Katis 2010). Corpus studies have estimated English to contain about 20-44 path verbs while Spanish has upwards of 63 (Cifuentes-Férez 2008; Talmy 2003).

2.2. ACQUISITION OF VERBS OF MOTION. Learning verb meanings poses a particularly complex set of challenges to the child—verbs may involve multiple participants, and require sensitivity not just to a category of object but to recognizing which of the infinite components present in a scene are relevant to the verb's meaning. This difficulty is reflected in the acquisition trajectory—although infants are tracking movement and events from infancy (Baillargeon 1987; Bertenthal et al. 2013; Bower et al. 1971; Pulverman 2005), they do not begin to map these events to verbs until much later (Behrend 1990; Hirsh-Pasek & Golinkoff 2010). Children begin mapping verbs later than they are mapping nouns to objects (Cartmill et al. 2014; Gleitman et al. 2005; Holowka et al. 2002).

Prior studies have specifically investigated children's sensitivity to manners and paths of movement and their ability to map those concepts to verbs. Pulverman et al. (2008) demonstrated that children even as young as 9 months were able to detect changes in manner and path. They conducted a visual fixation paradigm task where the child was presented with scenes that changed in manner, path, both, or neither. Both English-exposed and Spanish-exposed infants showed this same sensitivity. Language studies conducted with older children indicate that children begin to show language-specific bias for this typology between 3 and 7 years of age, and that before this point they show a path-bias—defaulting to encoding the path of motion over manner regardless of their language's typology (Naigles et al 1998; Allen et al. 2007; Skordos & Papafragou 2014).

Studies also indicate that perceptual sensitivity to aspects of motion may be separate from the process of linguistic encoding. In a study investigating English and Greek adult and 5-year-olds' interpretation of motion events, researchers found a disconnect between speakers' categorization preferences depending on whether the task involved verb mapping. Greek, like Spanish, is a *verb-frame* language. Speakers of both English and Greek preferred to categorize by the path of motion when the task did not require mapping to a verb, but were more likely to categorize based on their language typology in a linguistic task. These results suggest that bias toward manner interpretations is learned and language-specific (Papafragou & Selimis 2009). Research with children suggests that the cognitive underpinnings for sensitivity to path and manner are in place early, and even prioritize encoding path of motion. As children advanced in their language development, they begin to refine their encoding of motion events to be more closely in line with their language's typology.

2.3. OTHER CUES FOR VERB MEANING. In addition to the language-specific cues of manner vs. path preference, many other, language-external factors are also present during verb mapping. For example, motion verbs include a figure, or agent, performing the motion. Although the presence of an agent is critical for executing the motion being referred to by the verb, the specific identity of the agent is unlikely to be relevant to motion verb meaning. Forbes and Farrar (1995) find that that agent changes do not affect three-year-olds' performance in verb-learning tasks. Other external cues are also present at the time of mapping. For example, the events denoted by verbs

potentially take place in specific locations, and these locations may be relevant to verb meaning. For example, *swimming* and *diving* must take place in the water, *hiking* and *caving* must take place outside. For some words, this might just represent canonical locations where objects or events are likely to occur; *blenders* belong in the kitchen, *sleeping* often occurs in a bedroom. For some verbs, however, the event location seems to be critical to the meaning of the verb: an event is simply not a *swimming* event if it doesn't occur in the water. Because some verbs appear to have constraints on the location where the event to which they refer occur, an event's location may more likely to be encoded by the learner as potentially relevant to verb meaning.

A verb learning task reported by Smyder & Harrigan (2021) tests the role of agent identity and event location in mapping novel motion verbs. In a forced-choice task, they pit motion types (*manner*, *path*) against the environmental factors of agent identity and event location. The replicate previous findings about language-specific motion verb biases: English-learning children are significantly more accurate at mapping the *manner* of an event to a novel verb than the *path* of an event. They also find that children are sensitive to environmental factors in mapping verbs: they are more likely to be lured by the location of an event than they are by the identity of the agent performing the action. They hypothesize that this difference is driven by universal constraints on what external information may be encoded as part of verb meaning. While verbs can require events to occur in specific locations, they are unlikely to require specific agents. *Swimming* is only *swimming* if it happens in the water, *hiking* can only occur outdoors. The agent, however, is unlikely to be critical to the verb meaning. Perhaps children are aware of location as a potentially relevant factor, and therefore encoding this as potentially relevant to meanings of the new motion verbs presented in the task.

The current study extends on these findings, further investigating the sensitivity to event location. In this study, we manipulate the saliency of the location in which a novel motion event occurs, and find that children are more likely to encode location as relevant to the verb meaning when the location is more salient.

3. The study. This study investigates English-learning children's sensitivity to path and manner properties. Again, we use verb learning contexts in which the child is presented with a set of events that unambiguously portrays either a consistent manner or path of motion. We compare sensitivity to these properties to the external property of event location, manipulating the saliency of the location.

3.1. PARTICIPANTS. Participants were 26 monolingual English-learning preschool and elementary children aged 3;11-7;11 (mean = 6;1) recruited from the Williamsburg, VA area. Children were recruited via the William & Mary Child Language Lab database and online networking. All children were tested remotely over Zoom due to the COVID-19 pandemic. Participants were only eligible for participation if the researchers had received a completed consent form from the parent or legal guardian, and the child gave verbal assent.

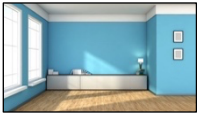


3.2. PROCEDURE. Each of the participants are shown the same series of short videos, consisting of 12 trials. Two pseudo-randomized orders of trials are randomly assigned to participants. For all participants, videos are displayed via screen sharing over Zoom, and children indicate their response by pointing. We ensure that the camera was situated to allow researchers to code pointing responses before the first trial begins. All participants are run in a relatively quiet space in their home, usually with a parent close by. All participants are given the option to stop the activity at any time.

3.3. DESIGN & MATERIALS. This study utilizes a 2x3 design. We manipulate within subjects MOTION TYPE (PATH v MANNER) and ENVIRONMENT SALIENCY (NEUTRAL v UNKNOWN v SALIENT). The video stimuli were edited using FinalCutPro. Actors were filmed performing actions in front of a green screen so that the background of the video could be manipulated. Four different actors were filmed, each performing four instances of three novel verbs, leading to a total of twelve videos per actor and forty-eight videos total. Half of the videos depicted novel manner verbs and the other half depicted novel path verbs. The actions were chosen to not too closely match any actions that would be familiar to children and/or match already named actions in the English language. Novel actions and paired novel verbs are shown in Table 1.

MOTION TYPE	verb	description
<i>path</i>	<i>avering</i>	left to right
	<i>funeeeking</i>	right to left
	<i>thorping</i>	moving in a circle
	<i>piffing</i>	diagonally toward
	<i>kwudgering</i>	diagonally away
	<i>blarbing</i>	zig zag movement
<i>manner</i>	<i>klarning</i>	lunge walk
	<i>wampering</i>	strut
	<i>visping</i>	gallop
	<i>fippering</i>	side hop
	<i>splunding</i>	crouch walk
	<i>maipsing</i>	crawl

Table 1. Novel verbs and actions for all items.

During filming, the manner actions were performed using the paths named above, and the path actions were performed using the manners named above to minimize novel information the children received. This also minimized the total number of videos that needed to be filmed. After running the study, one MANNER item had to be excluded from analysis, as the two manners during test looked too similar. We chose six different backgrounds, two in each of the three ENVIRONMENT SALIENCY categories. We chose the backgrounds based on adult piloting. Table 2 shows each of the backgrounds in each of the ENVIRONMENT SALIENCY categories.

ENVIRONMENT SALIENCY	description	image
NEUTRAL	<i>living room</i>	
	<i>field</i>	
UNKNOWN	<i>desert</i>	



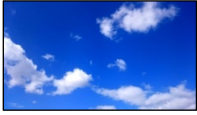
	<i>snow</i>	
SALIENT	<i>underwater</i>	
	<i>air</i>	

Table 2. Backgrounds by saliency category.

In a forced-choice task, each of the 12 trials consists of three video clips depicting intransitive events named by a novel verb. For each set of videos, children watch three familiarization videos followed by two test videos, all with the same actor. The three events always match on VERB TYPE and on ENVIRONMENT SALIENCY. They are named in the same way and with the same order every time (7), using pre-recorded audio for consistency.

(7) Look she's visping! She's visping again. She's visping here too.

During the test phase, the child sees two simultaneous videos on the screen, and must choose which one is the best example of the new verb depicted in the familiarization trials. One of the videos matches the familiarization trials in VERB TYPE, and the other matches in ENVIRONMENT SALIENCY. The background used in the test phase was a neutral background that did not appear in any of the other videos. The child is prompted to point at one of the test videos to indicate which one is the best example of the verb used to name the events during familiarization (8).

(8) Which one is visping? Can you find visping?

Children saw two trials for each combination of VERB TYPE and ENVIRONMENT SALIENCY, for a total of 12 trials per child. Each of background was used once each for each of the PATH verbs and once each for each of the MANNER verbs (table 3). A sample trial is shown in Figure 1.

VERB TYPE	ENVIRONMENT SALIENCY	description	# of trials
MANNER	NEUTRAL	<i>inside living room</i>	1
		<i>outside in field</i>	1
	UNKNOWN	<i>desert</i>	1
		<i>snow</i>	1
		<i>underwater</i>	1
		<i>air</i>	1
PATH	NEUTRAL	<i>inside living room</i>	1
		<i>outside in field</i>	1
	UNKNOWN	<i>desert</i>	1
		<i>snow</i>	1
		<i>underwater</i>	1
		<i>air</i>	1

Table 3. Number of trials by condition.




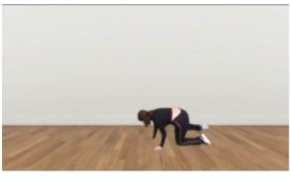

Familiarization			Test
			
			
“Look! She’s maipsing!”	“She’s maipsing here too!”	“She’s maipsing again!”	“Can you find maipsing?”

Figure 1. Sample MANNER NEUTRAL trial

3.4. PREDICTIONS. We predict a difference in performance based on MOTION TYPE (PATH v MANNER), as observed in previous studies. English-learning children are exposed to more verbs denoting manner, and should therefore be more accurate in learning new manner verbs compared to path verbs. In the current study, they should be more likely to be lured away from mapping the MOTION TYPE in the PATH compared to the MANNER conditions. In addition, we compare the influence of various environments in which the novel events might occur. We predict an effect of ENVIRONMENT SALIENCY: more salient environments should have a stronger impact on encoding, making children more likely to be lured away from encoding the MOTION TYPE.

3.5. RESULTS. Children’s responses were coded as the child delivered the response by the experimenter. We find, like previous experiments, that English-learning children are more accurate at mapping manner compared to path events (Table 4, Figure 2).

MOTION TYPE	accuracy
PATH	0.37
MANNER	0.66

Table 4. Proportion accurate responses for MOTION TYPE conditions.

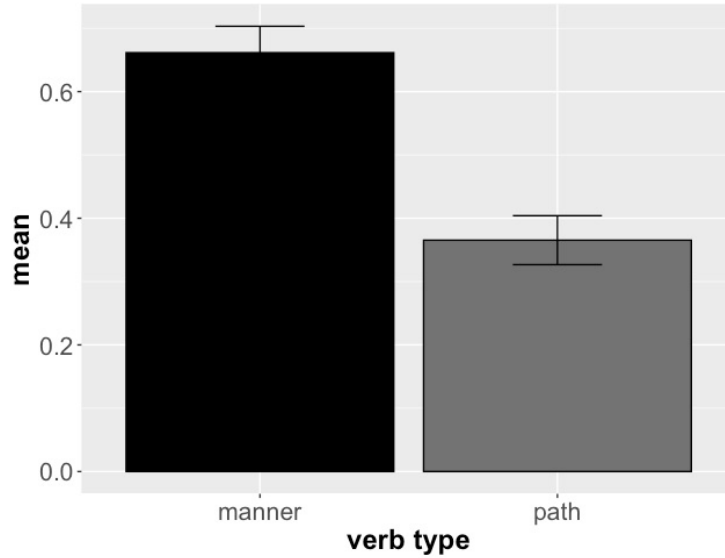


Figure 2. Proportion accurate responses for MOTION TYPE conditions.

We also find that children are differentially lured by ENVIRONMENT SALIENCY depending on the saliency: SALIENT backgrounds were the most disruptive, followed by the UNKNOWN, and then by the NEUTRAL. This supports our hypothesis that more salient event environments are more likely to be encoded by the learner as potentially relevant to verb meaning (table 5, figure 3).

ENVIRONMENT SALIENCY	accuracy
NEUTRAL	0.54
UNKNOWN	0.51
SALIENT	0.46

Table 5. Proportion accurate responses for ENVIRONMENT SALIENCY conditions.

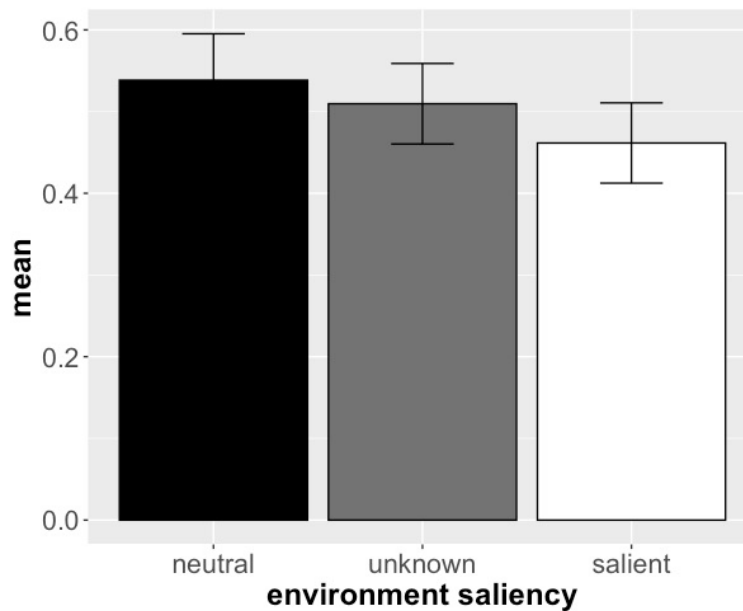


Figure 3. Proportion accurate responses for ENVIRONMENT SALIENCY.

A closer look at the combinations of MOTION TYPE and ENVIRONMENT SALIENCY reveals that the saliency of the background had an impact in the MANNER conditions, while the PATH conditions remain stable across the various backgrounds. Children are reticent to map path verbs at all in the study—choosing the environment match about half the time across all backgrounds. In the MANNER conditions, children have a high level of accuracy at mapping motion type when the background is neutral, but decrease in accuracy as the background saliency increases. Table 6 and figure 4 show the accuracy for all conditions.

MOTION TYPE	ENVIRONMENT SALIENCY	accuracy
MANNER	NEUTRAL	0.84
	UNKNOWN	0.69
	SALIENT	0.53
PATH	NEUTRAL	0.38
	UNKNOWN	0.33
	SALIENT	0.38

Table 6. Prop. accurate responses for MOTION TYPE and ENVIRONMENT SALIENCY conditions.

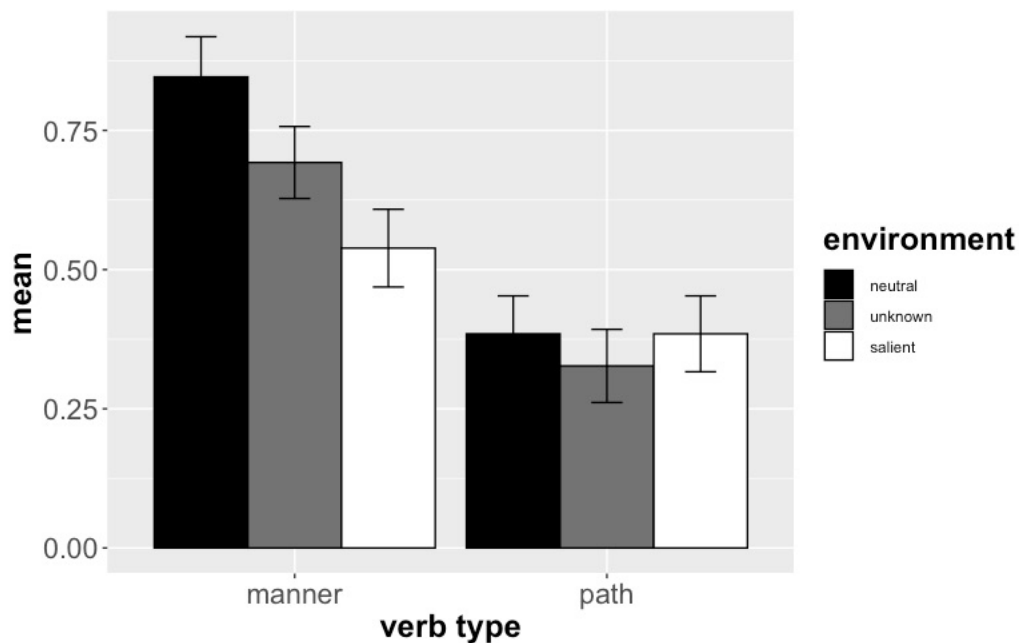


Figure 4. Prop. accurate responses for MOTION TYPE and ENVIRONMENT SALIENCY conditions.

3.6. STATISTICAL ANALYSIS. Statistical analyses support the findings. The results were analyzed using a generalized linear mixed effects model, which is a model appropriate for analyzing categorical data (Baayen 2007; Jaeger 2008). The reported models have random intercepts. These models predict the probability of a specific response (a correct answer) across different conditions (see Agresti 2002; Jaeger 2008). We ran a mixed-effect logit model with *correct response* as the dependent measure, with VERB TYPE (MANNER, PATH) and ENVIRONMENT SALIENCY (NEUTRAL, UNKNOWN, SALIENT) as fixed effects, and SUBJECT as a random effect. We find a main effect of VERB TYPE [$X^2_{(1)}=15.18, p=0.0001$], showing different response patterns for MANNER and PATH items—children are more likely to give correct responses on MANNER items,

and more likely to be lured by environment on PATH items. We also find a main effect of ENVIRONMENT SALIENCY [$X^2_{(2)} = 8.675, p = 0.013$], indicating that the influence of background differed across the levels of background salience—specifically, children are less likely to be lured by background for the lower-salience background items. We also find a two-way interaction between VERB TYPE and ENVIRONMENT SALIENCY [$X^2_{(2)} = 7.608, p = 0.022$], illustrating that background differentially impacts likelihood of correct responses for MANNER and PATH items.

In order to better understand the interaction effects between VERB TYPE and ENVIRONMENT SALIENCY, we also analyze each level of ENVIRONMENT SALIENCY separately. We ran three pairwise comparisons over each MANNER/PATH pair. We find that in the in the NEUTRAL and UNKNOWN ENVIRONMENT SALIENCY conditions, children are differentially likely to give verb responses across MANNER v. PATH trials—they are better at learning manner verbs than path verbs when the motions occur in these lower-saliency environments. In the SALIENT ENVIRONMENT SALIENCY conditions, children are equally likely to give verb responses across MANNER and PATH—they are at chance for both verb types (although they slightly more accurate in the MANNER condition with a marginally significant difference). This indicates a strong overall influence of background in the high saliency condition, to the point that it is distracting even with mapping manner verbs, at which they are otherwise highly successful. Estimated marginal means and p-values for each condition are reported in Table 7.

	Probability correct response (SE)		p-value
	MANNER	PATH	
NEUTRAL	0.88 (0.06)	0.36 (0.09)	0.0001*
UNKNOWN	0.73 (0.08)	0.29 (0.09)	0.0001*
SALIENT	0.55 (0.09)	0.36 (0.09)	0.08 [†]

Table 7: Pairwise comparisons of correct responses in ENVIRONMENT SALIENCY conditions.

We also analyze each level of VERB TYPE separately. We ran four pairwise comparisons over each MANNER/PATH pair. We find that in the in the MANNER conditions, children are differentially likely to give correct responses in the NEUTRAL v. the SALIENT ENVIRONMENT SALIENCY conditions, but not in NEUTRAL compared to UNKNOWN or UNKNOWN compared to SALIENT. In the PATH conditions, the likelihood of correct responses does not differ across any of the ENVIRONMENT SALIENCY pairings. Table 8 reports p-values for each pairing.

	p-value		
	NEUTRAL/ UNKNOWN	NEUTRAL/ SALIENT	UNKNOWN/ SALIENT
MANNER	0.25	0.014*	0.17
PATH	0.77	1.00	0.77

Table 8: Pairwise comparisons of correct responses in VERB TYPE conditions.

Overall, the statistical models support two findings. First, the main effect of VERB TYPE replicates prior work, indicating that English-learning children are more accurate at mapping manner verbs than path verbs. Second, children are influenced by the environment that an event occurs in when they are learning new verbs. The main effect of ENVIRONMENT SALIENCY indicates that children are more influenced by more salient backgrounds, and the interaction between VERB TYPE and ENVIRONMENT SALIENCY demonstrates the differential effect of background across verb

types: children are lured by all backgrounds while learning path verbs, but only lured by salient backgrounds while learning manner verbs.

4. Discussion. The findings of the current study are consistent with other reports of children’s language-specific motion verb biases. The findings of this study also expand on the findings from Smyder & Harrigan (2021): children are influenced by the location in which an event takes place when they are attempting to map that event onto a new verb. In their study, kids were more sensitive to location changes than agent changes when mapping novel events to novel verbs. In the current experiment, we find that this location sensitivity is not consistent across every location—children are differentially sensitive to a location based on saliency, and based on the type of verb they are mapping. For path verbs, English-learning children are consistently lured by any background change, regardless of saliency, suggesting that they are weak at mapping path verbs in general, and can be disrupted by less salient changes. For manner verbs, however, we see that the saliency of the change impacted the likelihood that they will be disrupted. For neutral backgrounds, they are highly accurate at mapping manner verbs, but as they saliency of the background increases, so too does their likelihood of errors. This work adds to our understanding of children’s use of various competing cues in acquiring verbs.

4.1. REMAINING QUESTIONS. While this work serves as a starting point for understanding the role of an event’s location in the meaning of the verb that references it, several unanswered questions remain. In this section we will spell out some of these remaining questions, a few of which we are currently attempting to address with in-progress work.

One question that arises from this work is how children weigh event location against other language cues. The language cues used in this study were not only about language generally, but actually specific to the language that our participants are learning. English-learning children were tested on their ability to weigh location against a language cue that is either predicted by their language—manner encoded on the verb, or one that is not predicted by their language—path encoded on the verb. We found that they were differentially influenced by this location change in learning path vs. manner verbs, suggestion that the weight of the language cue is connected to learned information about their own target language. Other language cues might behave differently. For example, the cue of syntactic structure—specifically number of arguments—is useful to young learners in hypothesizing the number of participants in an event (Naigles 1990). This is a cue that is robust across languages (Lidz & Viau 2011), and therefore represents a different kind of language knowledge than a motion type preference, which varies by language. A set of ongoing studies from our lab investigate children’s ability to override location change when it conflicts with syntactic information (see Harrigan & Bagnoli 2023).

A second set of questions left unanswered by this work is that of the nature of *saliency* across the various backgrounds used in the study. We used adult pilot data and the presence of location-specific English verbs (*swim, dive, float*, etc.) to hypothesize what might be considered more salient to the child as the background of an event. But it remains unclear exactly what makes something a salient location for an event. Is it about the presence of verbs already in the child’s lexicon that are specific to a location? Is it about locations the child is less likely to encounter regularly? Is it about some locations being physically unfriendly (or even impossible) for human-performed events (i.e. underwater, suspended in air, in the snow)? Future work may investigate this question further.

5. Conclusion. The current study investigates cues to verb meaning: we test the ability of 4-7 year old English-learning children to map novel motion verbs in the face of location changes. In

this study, we teach children novel motion verbs, pitting motion type against event location, and manipulating the saliency of that location. We find that children are differentially influenced by the location change: while they are lured by background changes for all path verb mappings, for manner events they are more likely to be lured away from mapping motion type when the background in which the motion occurred is more salient. This confirms the hypothesis proposed in Smyder & Harrigan (2021): children are sensitive to event location in mapping motion verbs. We argue that the sensitivity to background environment over agent identify reflects a potentially universal cue to verb meaning, as some verbs require event occurrence in specific locations—*swimming* is simply not *swimming* if it doesn't occur in the water. These studies contribute to our understanding of how children weigh language-specific cues, like a language's motion type dis-tribution, against language-external universal cues like event location.

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